

REMARKS

Claims 1-28, 30 and 31 are pending in the present application. Claims 15-28 are withdrawn. Claims 1, 2, 5, 6, 9, 10, 13, 30 and 31 are allowed. Claims 3, 4, 7, 8, 11, 12 and 14 are rejected herein. Claims 3, 4, 7, 8, 11 and 12 are herein canceled. Claim 14 is amended. The amendment of claim 14 is based on the structure disclosed in, e.g., FIGs. 10A and 18A. In these figures, the lower electrode 42 is not in contact with the insulation film 30 or the insulation film 52. No new matter has been entered.

Claim Rejections under 35 U.S.C. §103(a)

Claims 3, 4, 7, 8, 11, 12, and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Summerfelt et al. (U.S. Patent No. 5,619,393) in view of Shimada et al. (U.S. Patent No. 6,294,860) and Kim (U.S. Patent No. 6,255,740).

Applicants herein amend claim 14. Subsequently, Applicants respectfully disagree with the rejection because not all of the claimed limitations are taught or suggested by the cited combination.

Applicants note that claim 14 has a feature that the lower electrode has a height larger than a width thereof and is not in contact with the insulation film, which suppresses a stress applied to the capacitor dielectric film caused by a thermal expansion coefficient difference between the substrate and the capacitor dielectric film. According to these feature of the claimed invention, the contact area between the lower electrode and the base structure can be much decreased, so that the stress applied to the capacitor dielectric film via the insulation film and others caused by a thermal expansion coefficient difference between the substrate and the capacitor dielectric film can be much suppressed (note page 37, line 16 to page 38, line 17 of the

specification of the present application) According to this feature of the claimed invention, the capacitor dielectric film of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the semiconductor substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode can be easily formed.

On the other hand, Applicants note that Summerfelt et al. and Shimada et al. neither teach nor suggest the barrier metal layer having a width smaller than that of the lower electrode. Therefore, Applicants submit that Summerfelt et al. and Shimada et al. do not provide any motivation for the present invention.

Applicants note that Kim discloses in Fig. 2 the barrier metal layer 31 having a width smaller than that of the lower electrode 39a. However the lower electrode 39a of Kim is in contact with the insulation film 23, so that the stress caused by a thermal expansion coefficient difference between the substrate 21 and the capacitor dielectric film 43 is applied to the capacitor dielectric film via the insulation film 31. Therefore, the above-described effects achieved by the present invention are not obtained by the semiconductor device of Kim, which neither teaches nor suggests the lower electrode being not in contact with the insulation film formed below the lower electrode and having the contact plug connected to the lower electrode buried therein.

Therefore, even if the cited references were properly combined, the present invention would have been unobvious to one of ordinary skill in the art.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

• Response under 37 C.F.R. §1.111
Attorney Docket No. 011254
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If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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